AMENDMENTS TO THE CLAIMS

1. (Previously Presented) An apparatus for closure of a physical anomaly that forms a gap in a vascular wall, the apparatus comprising:

a closure body, said closure body made of a shape memory polymer (SMP) foam,

said shape memory polymer (SMP) foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans},

said shape memory polymer (SMP) foam having the ability of being formed into a primary shape at temperature above T_{trans} with a volume larger than the gap in the vascular wall,

said shape memory polymer (SMP) foam having the ability of being compressed into a reduced secondary stable shape by being cooled to a temperature below the T_{trans} with a volume smaller than the gap in the vascular wall,

said shape memory polymer (SMP) foam having the ability of being controllably actuated by being heated to a temperature above the T_{trans} so that it recovers its primary shape with a volume larger than the gap in the vascular wall, and

a delivery device adapted to received said closure body made of a shape memory polymer (SMP) foam with said shape memory polymer (SMP) foam being compressed into said reduced secondary stable shape in said delivery device by being cooled to a temperature below the T_{trans} with a volume smaller than the gap in the vascular wall, said delivery device adapted to deploy said closure body into the physical anomaly in the vascular wall,

wherein said shape memory polymer (SMP) foam of said closure body in said reduced secondary stable shape is configured for positioning said closure body within the physical anomaly in the vascular wall, and

wherein said shape memory polymer (SMP) foam is controllably actuated by being heated to a temperature above the T_{trans} so that it recovers its primary shape with a volume larger than the gap in the vascular wall with said primary shape configured to close said anomaly.

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The apparatus of claim 1 including actuator means for controllably actuating said shape memory polymer (SMP) foam having at least one hard segment wherein said hard segment is formed at a temperature above T_{trans} by changing said temperature above T_{trans} .

5. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a tube and a plunger in said tube that deploys said closure body into the physical anomaly in the vascular wall.

6. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a tube, a plunger in said tube that deploys said closure body into the physical anomaly in the vascular wall, and a restraint tube for backbleed measurement.

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Previously Presented) The apparatus of claim 1 wherein said delivery device is a delivery catheter.

12. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a plunger actuator.

13. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a backbleed tube.

14. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a plunger actuator and a delivery catheter.

15. (Previously Presented) The apparatus of claim 1 wherein said delivery device includes a delivery catheter, a plunger actuator, and a restraint tube.

16. (Previously Presented) The apparatus of claim 1 wherein the physical anomaly is an arteriotomy puncture site.

17. (Previously Presented) The apparatus of claim 1 including actuator means for controllably actuating said shape memory polymer (SMP) foam, said actuator means

configured to transition said closure body from said reduced secondary shape to said primary shape by changing said temperature above T_{trans} by heating.

18. (Cancelled)

19. (Previously Presented) A method of closing a physical anomaly that forms a gap in a vascular wall, the method comprising:

providing a closure body made of a shape memory polymer (SMP) foam,

said shape memory polymer (SMP) foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans},

said shape memory polymer (SMP) foam capable of being formed into a primary shape at temperature above T_{trans} with a volume larger than the gap in the vascular wall,

compressing said shape memory polymer (SMP) foam into a reduced secondary stable shape by cooling said shape memory polymer (SMP) foam to a temperature below the T_{trans} with a volume smaller than the gap in the vascular wall,

positioning said closure body made of said shape memory polymer (SMP) foam in the physical anomaly in the vascular wall when said closure body is in said reduced secondary stable shape with a volume smaller than the gap in the vascular wall, and

transitioning said closure body made of a shape memory polymer (SMP) foam to said primary shape within the physical anomaly in the vascular wall by heating said shape memory polymer (SMP) foam and changing said temperature above T_{trans} so that it recovers its primary shape with a volume larger than the gap in the vascular wall thereby closing said physical anomaly.

20. (Previously Presented) The method of claim 19 wherein said step of transitioning the closure body comprises transitioning the closure body with an actuator system that uses light, coherent light, or heat.

21. (Previously Presented) The method of claim 20, wherein said step of transitioning the closure body comprises transitioning the closure body with an actuator system chosen from the group consisting of external sheaths, removable sheaths, constraint sheaths, light, coherent light, heat, externally applied energy, plungers, RF, induction, stress, and combinations thereof.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Previously Presented) The method of claim 19 wherein said step of positioning said closure body made of said shape memory polymer (SMP) foam in the physical anomaly in the vascular wall further comprises positioning said closure body made of said shape memory polymer (SMP) foam in the physical anomaly in the vascular wall with a plunger.

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Previously Presented) The method of claim 19 wherein the physical anomaly is chosen from the group consisting of arteriotomy puncture sites, septal defects, patent ductus, and combinations thereof and wherein said step of positioning said closure body made of said shape memory polymer (SMP) foam in the physical anomaly in the vascular wall further comprises positioning said closure body made of said shape memory polymer (SMP) foam in said arteriotomy puncture sites, septal defects, patent ductus, or combinations thereof.

32. (Previously Presented) A system for the closure of a physical anomaly that forms a gap in a vascular wall, the system comprising:

a closure body for closing the anomaly, said closure body made of a shape memory polymer (SMP) foam,

said shape memory polymer (SMP) foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans},

said shape memory polymer (SMP) foam having the ability of being formed into a primary shape at temperature above T_{trans} with a volume larger than the gap in the vascular wall,

said shape memory polymer (SMP) foam having the ability of being compressed into a reduced secondary stable shape by being cooled to a temperature below the T_{trans} with a volume smaller than the gap in the vascular wall,

said shape memory polymer (SMP) foam having the ability of being controllably actuated so that it recovers its primary shape with a volume larger than the gap in the vascular wall,

a delivery device adapted to received said closure body made of a shape memory polymer (SMP) foam with said shape memory polymer (SMP) foam being compressed into said reduced secondary stable shape by being cooled to a temperature below the T_{trans} with a volume smaller than the gap in the vascular wall, said delivery device adapted to deploy said closure body into the physical anomaly in the vascular wall,

said shape memory polymer (SMP) foam reduced secondary stable shape configured for positioning said closure body in the physical anomaly in the vascular wall,

means for positioning said closure body in the physical anomaly in the vascular wall when said closure body is in said reduced secondary stable shape; and

means for transitioning said closure body to said primary shape by heating said shape memory polymer (SMP) foam to a temperature above the T_{trans} so that it recovers its primary shape with a volume larger than the gap in the vascular wall for closing said anomaly.

33. (Cancelled)

34. (Previously Presented) The system for the closure of a physical anomaly of claim 32 wherein said shape memory polymer (SMP) foam of said closure body with a secondary shape for being positioned in the physical anomaly and a larger primary shape for closing said anomaly, said shape memory polymer foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans} and wherein said means for transitioning said closure body changes said temperature above T_{trans} by heating.

35. (Previously Presented) The system of claim 32 wherein said means for positioning said closure body in the physical anomaly in the vascular wall is a delivery catheter.